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judged even by the standard of their effects on the outside world, my sensation blue and my reaction to that sensation are two different phenomena." This argument, it seems to me, disposes of the ordinary behaviorist on his own ground: what effect it has on Dr. de Laguna's behaviorism I do not know, because I do not understand what her type of behaviorism really is.

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DOCTRINAL FUNCTIONS

PROFESSOR Keyser's article with this title¹ is so illuminating and so completely confirms certain suspicions I have long entertained, that I am tempted to draw some further corollaries from his doctrine, and to ask him whether they would not meet with his assent.

1. If, as he shows, a "postulate-system" requires interpretation and admits of more than *one*, and is therefore to be regarded as a "doctrinal function" of which the variables may be filled up variously by various persons, may we not trace this state of things elsewhere than in mathematics? Will it not follow that *any* "doctrine" which is laid down dogmatically or hypothetically but is capable of various interpretations, is in truth a "doctrinal function." In particular, is it not manifest that the various philosophies and religions are preeminently doctrinal functions? They are assuredly "postulate-systems" in their genesis, which are believed and declared true long before they are proved. They are built up mostly of value-judgments and "presuppose" some essential dogma which is an article of faith, though it is usually *camouflaged* as an "ultimate demand of reason." They always contain, moreover, "one or more undefined terms" (generally *more!*), as well as "at least one element, that is to say a thing or a substantive as distinguished from a relation." Moreover the great variability exhibited by philosophies and religions is well accounted for by their being "postulate-systems;" while the great variety of interpretations put upon an established system, like Idealism, Realism or Christianity, is natural enough if they are really "doctrinal functions," to which each believer can give the values most pleasing to himself. What is true of religions and philosophies applies also to political creeds and catchwords; they too are plainly "doctrinal functions."

2. Are there not a large number of persons many or all of whose beliefs are habitually "doctrinal functions?" For the meaning and value they attach to them appear to vary considerably with their circumstances, moods, temper and state of health.

¹ In this JOURNAL, XV., p. 262.

3. I was not a little delighted to hear from Professor Keyser that, unlike a "proposition," "a propositional function is neither true nor false," because "it is always possible to select such constants as will, if substituted for the variables of a given function convert the latter, not into a proposition, but into nonsense."

This appears to me to be profoundly true, and to be applicable to the whole of *pure* mathematics. There is not, properly speaking, any mathematical *truth*, because all mathematical doctrines are "doctrinal functions," capable of an infinity of applications true and false, significant and nonsensical; and, until the mathematical formula is actually *applied*, *i. e.*, *used*, nothing can be predicted about the value or validity of the interpretation put upon it and the values assigned to its variables. This may perhaps be made sufficiently clear by a very elementary illustration. If the formula " $2 + 2 = 4$," which is usually regarded by philosophers as an "absolute truth," is in reality a doctrinal function, it will be possible to apply it to cases such that the resulting "propositions" will be (*a*) *nonsense*, and (*b*) *false*. Accordingly we *can* apply it to disparate entities and demand to be told what sum results from the addition of 2 caterpillars to 2 virtues? Common-sense will of course correctly answer that the problem is nonsense, because the entities to be summed are not comparable for any rational purpose. Nor again can the question "What will 2 lions added to 2 lambs make?" be answered truly by "*four*." The lions will no doubt make a meal; but this answer is not arithmetical, and the arithmetical formula has proved inapplicable. In short, before we can infer that $2 + 2$ make 4 in any application we have to be reasonably certain that the case is such that the entities concerned may be treated, for our purpose, as homogeneous units.

Furthermore, the principle that a formula is only a "doctrinal function" in its "pure," abstract, or unapplied state, applies far beyond the range of mathematics. Indeed it seems to hold universally. There appears to be *no* doctrine whatsoever which it is not possible, with a little ingenuity, to reduce to *nonsense*, if it is taken merely as a verbal formula and without regard to the meaning sought to be conveyed by its means in a definite situation by a definite person. Similarly it will be found that such a formula may always have a value assigned to its terms which will yield a *false* proposition.

That this has not altogether escaped the notice of all philosophers I have endeavored to make clear in my article on *Aristotle's Refutation of Aristotelian Logic*.² I there showed that Aristotle (on occasion) was aware that a general rule may be true in the abstract ($\delta\pi\lambda\hat{\omega}s$) when unapplied, and yet may fail to apply, or be falsified, in

² In *Mind*, N. S., No. 89.

a special case. The great example of this principle, which has forced itself on the notice of mankind, is the breakdown of ethical rules when they encounter the difficulties of casuistry. It is not apparently possible so to formulate any ethical rule as to confer on it a prophetic adjustment to the circumstances of special cases sufficient to decide them aright in advance, or even to be felt by the best moral sentiment to have any significant application to them at all. "The noble death of Cato" does not fall under the rule against suicide, any more than Regulus's return to Carthage or Socrates's refusal to escape from the city that was bent on "sinning against philosophy," while only a moral pedant would refuse to celebrate with the poet acts like that of Hypermnestra, *splendide mendax, et in omne virgo nobilis aevum*. This impossibility of fixing, in advance of the facts, the rule to be applied to the case is the reason why any applicable system of ethics is always careful to leave the ultimate decision of the right thing to do to the intelligent moral judgment of someone who knows the particular circumstances of the case.

Now the inferences I would draw from this situation are two. (1) There are *no* rules which can be pronounced *absolutely* true, no truths which are strictly universal: those so called, which are common enough, are true in general ($\delta\pi\lambda\omega\varsigma$), and their "truth" does not preclude failure and falsity when they are applied to the wrong sort of case. (2) There are no rules, "universals," "principles," etc., which do not get their real meaning from their application to cases; and as this application has always to be made by some one who wishes to use them, real meaning is always personal. If they are taken in the abstract, the "meaning" that clings to them is merely verbal "dictionary-meaning;" because in Professor Keyser's phraseology they are only "doctrinal functions." The application of these two corollaries to philosophic controversy would, I am sure, greatly accelerate philosophic progress, by clearing away great masses of pseudo-problems and enormously simplifying those that remained.

F. C. S. SCHILLER.

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OF OUTER-WORLD OBJECTS

IN a previous issue of this JOURNAL¹ I have called attention to the well-recognized fact that, if some special characteristic x is frequently noted as inherent in a frequently observed experience A ; then where there is given a less frequently observed experience B in which this characteristic x also inheres, the remainder of the more

¹ Vol. XV., No. 23, pp. 627 ff.